



MONTHLY AIR QUALITY REPORT FOR
NOVEMBER 2010

AOI COLOR SCALE

GOOD	MODERATE	UNHEALTHY FOR SENSITIVE GROUPS	UNHEALTHY
0-50	51-100	101-150	151-200

Calendar of maximum AQI values & their corresponding color for November 2010*

*Preliminary data

SAMPLE POLLUTANT REPORTING BOX

1 (day of month)	O3	CO
	PM10	PM2.5

	SUN	MON	TUES	WED	THU	FRI	SAT						
		1	39 14 44 43	2	42 16 51 36	3	39 16 53 48	4	38 10 49 28	5	40 19 57 42	6	42 24 53 48
7	39 22 49 44	8	37 14 55 34	9	36 06 31 18	10	36 10 49 31	11	40 14 47 31	12	37 10 53 42	13	41 15 61 59
14	37 14 44 59	15	32 14 48 42	16	36 13 48 38	17	40 16 62 45	18	42 19 66 50	19	38 23 67 63	20	35 23 46 45
21	31 11 33 31	22	34 11 28 32	23	29 14 34 54	24	34 13 46 55	25	36 11 31 52	26	36 18 39 62	27	34 28 54 78
28	36 19 42 54	29	33 11 55 32	30	32 23 53 68								

Calendar of High Pollution Advisories and Health Watches issued during November 2010

SUN			MON			TUE			WED			THU			FRI			SAT		
		1			2			3			4			5			6			
7		8			9			10			11			12			13			
14		15			16			17			18			19			20			
21		22			23			24			25			26			27			
28		29			30															
									-NONE-											

LEGEND

HIGH POLLUTION ADVISORIES

- A** = PM-10 High Pollution Advisory
- B** = PM-2.5 High Pollution Advisory
- C** = Ozone High Pollution Advisory

HEALTH WATCHES

- D** = PM-10 Health Watch
- E** = PM-2.5 Health Watch
- F** = Ozone Health Watch

Calendar of Meteorological Conditions observed in Metro Phoenix during November 2010

SUN			MON			TUE			WED			THU			FRI			SAT		
		1			2			3			4			5			6			
7		E			E									D						E
14		E															E			D
21		B C																		E
28		B						E												

LEGEND

ELECTROMETEORS

- A** = Thunderstorm

HYDROMETEORS

- B** = Rain/Drizzle/Hail/Snow
- C** = Fog

LITHOMETEORS

- D** = Blowing Dust
- E** = Haze (vsby <10SM)
- F** = Smoke

Exceedance days during NOV 2010-

Total= 0 Date Max AQI Pollutant Site/s

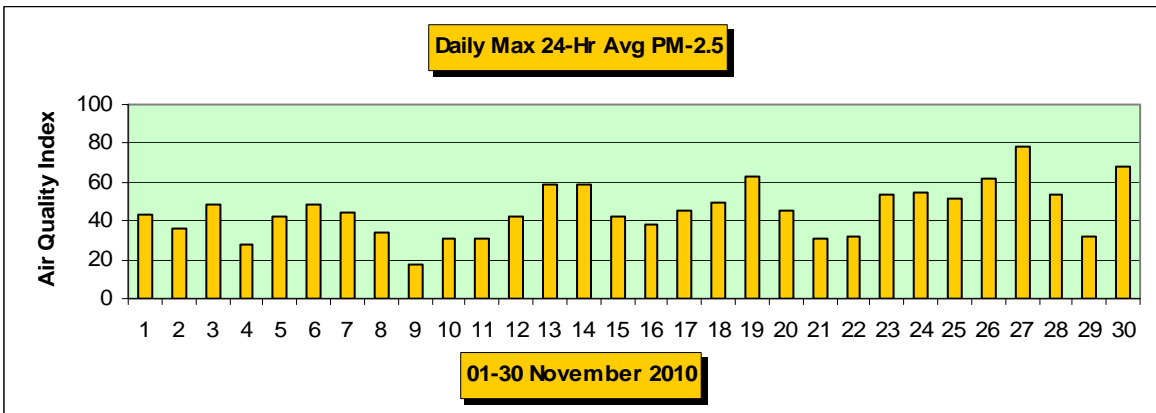
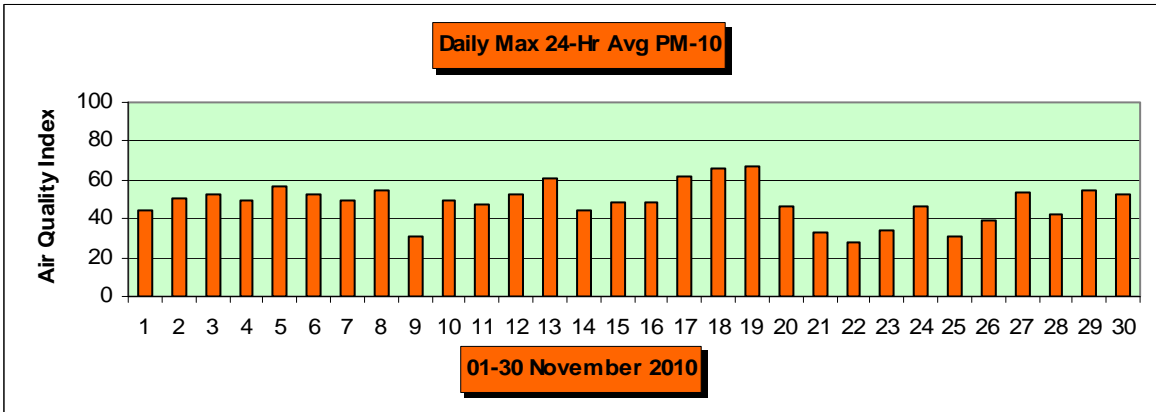
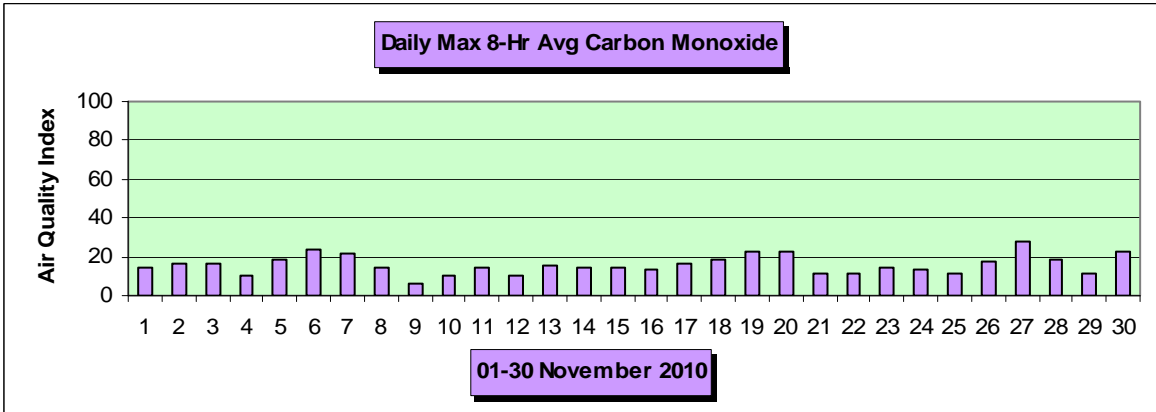
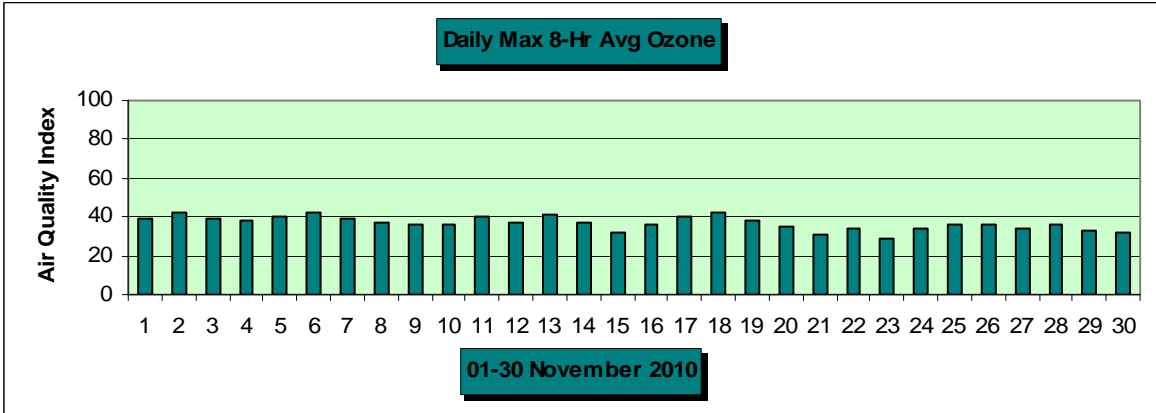
Health Watches issued during NOV 2010-

Total= 0 Date Max AQI Pollutant Site/s

High Pollution Advisories issued during NOV 2010-

Total= 0 Date Max AQI Pollutant Site/s

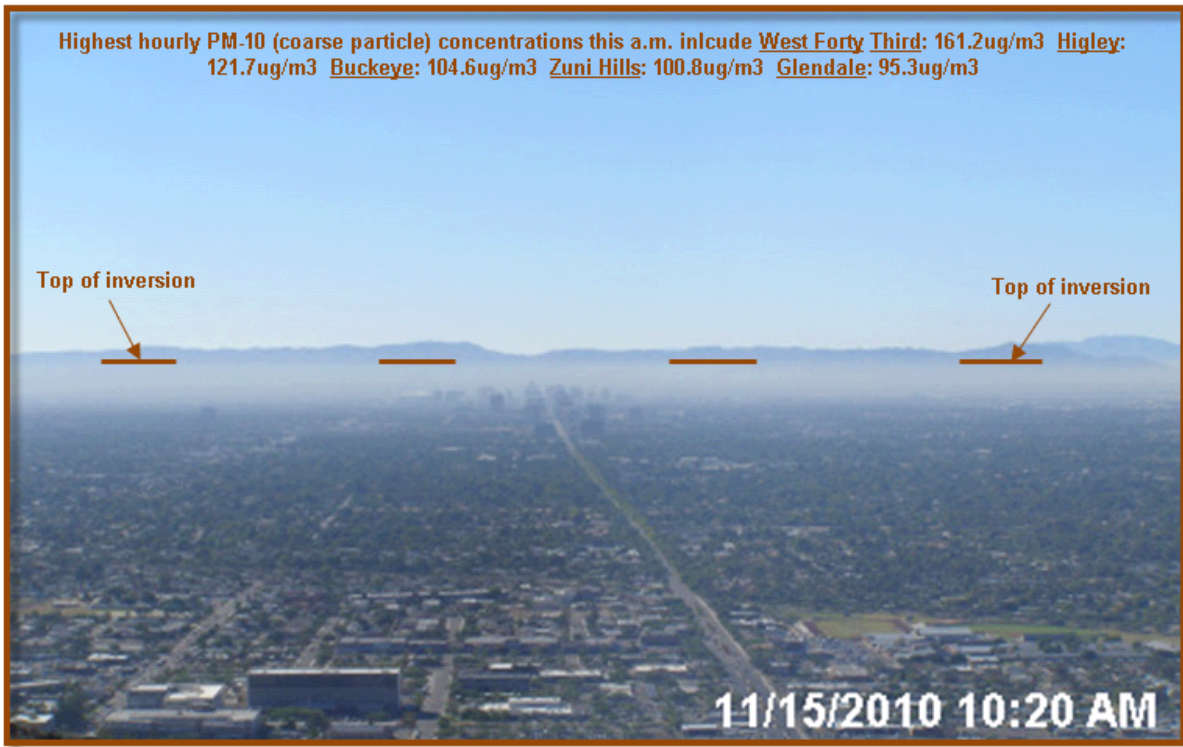
Concentration Recap: Days in the **Good** category: 11
Days in the **Moderate** category: 19
Days in the **Unhealthy for Sensitive Groups** category: 0
Days in the **Unhealthy** category: 0
Total Forecast Days: 30



Narrative:

The very warm weather of October continued into early November in the Phoenix metro area with high temperatures at Sky Harbor Airport in the 80's and 90's and low temps in the 50's and 60's thru the 8th of the month. A strong upper level ridge dominated the region during this period and although strong overnight radiation inversion formation, less than favorable dispersion, and mostly light or calm winds occurred at times, daily coarse and fine particle (PM-10 & PM-2.5) pollution levels rose no higher than the low-moderate range of Air Quality Index. The low PM-10 levels were held down due in no small part to the rainy periods that occurred during October. The mid-latitude storm track became active thereafter with a large, deep, but dry (due to its overland trajectory) upper level trough that arrived over AZ on the 9th and remained nearby thru the 16th. As a result, Valley high temperatures that followed were in the 70's and 80's and lows in the 40's and 50's thru the 21st. Some upward movement in hourly particle pollutant concentrations occurred, along with visibility degradations – especially hourly readings during the morning hours (see Figure 1) – but 24-hour average levels remained quite low.

Figure 1



Another much colder and marginally wetter long-wave trough and surface cold front then arrived over the area on the 22nd. Ahead of this system wind gusts up to 30 mph and areas of blowing dust occurred on the 20th as well as on the 21st when wind gusts to 40 mph were registered. In addition, mostly trace rainfall amounts fell on the 21st and some fog was reported. This trough was followed by a re-enforcing short-wave on the 24th and then another large trough arrived overhead on the 28th at which time more light rainfall was confirmed. The presence of these features lowered high temperatures into the 50's and 60's and low in the 30's and 40's during the remainder of the month. The additional rainfall helped keep coarse particle levels way down; conversely, fine particle levels increased – likely due mainly to an increase in smoke from residential wood-burning that typically begins before and continues thru the holidays. (Boundary layer – the surface to 2000' layer – conditions historically exacerbate this situation as the local air mass

becomes increasingly stagnant). In the wake of the final trough a high-amplitude ridge aloft was headed toward AZ by late on the 29th. Figure 2 shows a pair of Sky Harbor Airport ACARS soundings – one at 10:14 p.m. on the 29th and the other at 6:40 a.m. on the 30th. These soundings illustrate the incredible warming aloft that occurred at the 10K' level above the metro area during that 8+ hour period. This situation had taken a turn for the worse by the morning of November 30th with a mixing depth of only 3800', marginal to poor dispersion, mostly light or calm winds, and a strong morning inversion. Figure 3 is a photograph taken by the local VISNET camera array and shows the high degree of low-level atmospheric “PM loading” over the Valley on the 30th. As seen in Figure 4 the air mass continued to warm aloft and hence the stagnation situation worsened into December when particle pollutant levels increased dramatically (see the December 2010 report when published). -Reith

Figure 2

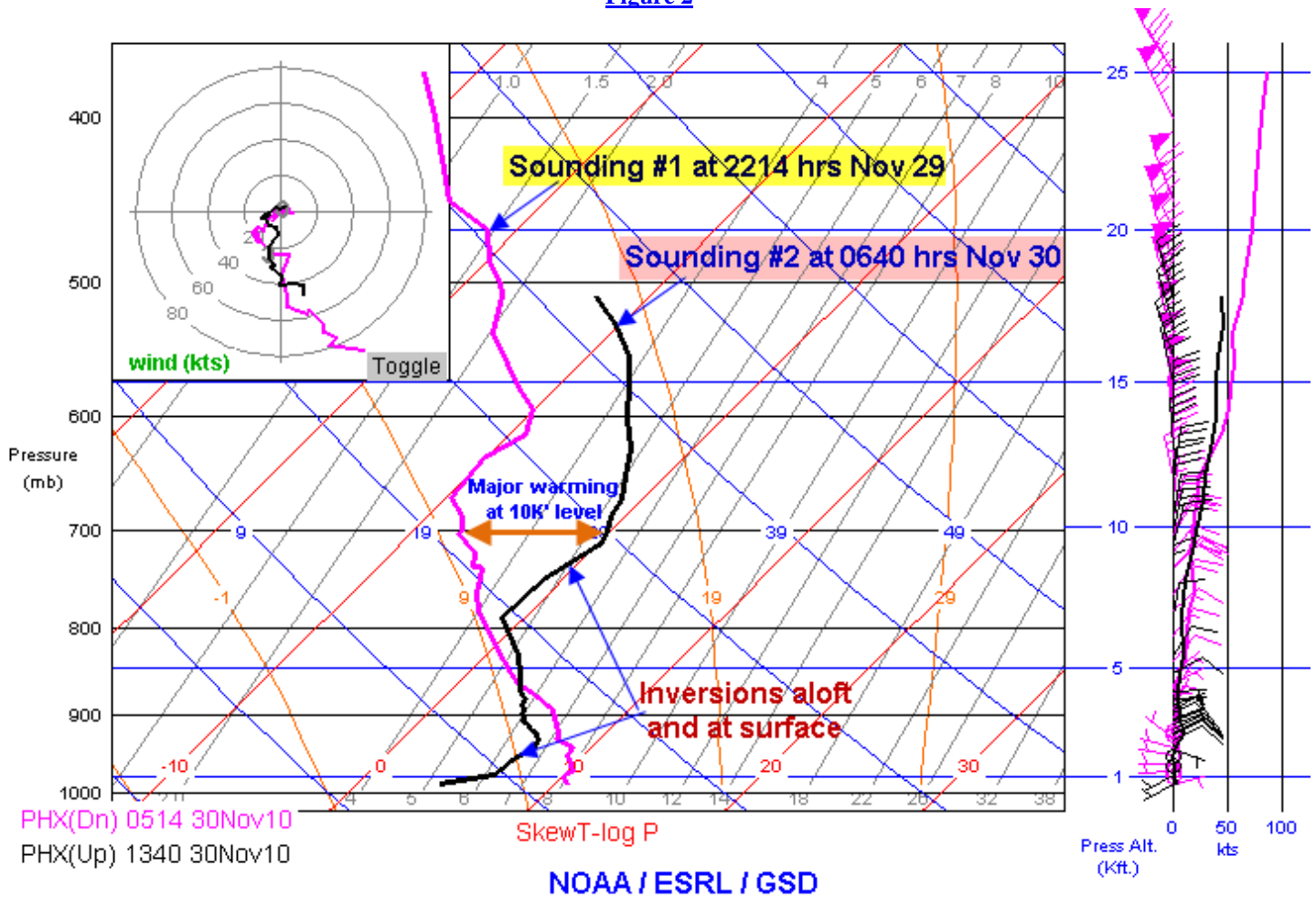


Figure 3



Figure 4

